International Journal of Otorhinolaryngology and Head and Neck Surgery
Behera D et al. Int J Otorhinolaryngol Head Neck Surg. 2024 Dec;10(6):662-668
http://www.ijorl.com
pISSN 2454-5929 | eISSN 2454-5937

DOI: https://dx.doi.org/10.18203/issn.2454-5929.ijohns20243505

Original Research Article

Knowledge, attitudes, and practices of gynaecologists and paediatricians regarding newborn hearing screening in Odisha

Dipika Behera[1]*, Aparna Nandurkar[2]

[1]Department of Audiology, Hear Clear, Priority Hearing, Delhi, India
[2]Audiologist and Speech-Language Pathologist, Mumbai, Maharashtra, India

Received: 19 July 2024
Revised: 07 October 2024
Accepted: 08 October 2024

***Correspondence:**
Dr. Dipika Behera
E-mail: dipikaaslp@gmail.com

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ABSTRACT

Background: Gynaecologists and paediatricians are crucial in detecting hearing loss at the first level of intervention. These healthcare workers are the ones who initially interact with infants and their parents. Therefore, they must understand the risk factors for newborn hearing loss and have a positive attitude toward early intervention. There were few studies conducted to evaluate the Knowledge Attitude and Practices (KAP) of New Born Hearing Screening (NBHS) among paediatricians and other physicians in Western countries and few in the Indian context. Thus, the current study aims to compare and examine the knowledge, attitudes, and practices of gynaecologists and paediatricians regarding newborn hearing screening in Odisha.
Methods: A survey questionnaire containing 45 close-ended and 5 open-ended questions was developed. This questionnaire was validated by paediatricians, gynaecologists, and audiologists and then applied among 300 professionals in Odisha.
Results: In all the sections it was found that paediatricians have greater knowledge than gynaecologists, however, both professionals have a positive attitude towards NBHS in Odisha. Mann-Whitney U test revealed significant differences in knowledge, attitudes, and practices among paediatricians and gynaecologists in Odisha.
Conclusions: From this survey, it can be concluded that most of the paediatricians know more about paediatric hearing loss in comparison to gynaecologists, while both of them have positive attitude in implementing NBHS in Odisha. An awareness should be created among both the professionals about NBHS, effect of hearing loss and to whom they can refer for NBHS, which will benefit the newborns and their parents.

Keywords: Gynaecologists, KAP survey, New born hearing screening, Odisha, Paediatricians

INTRODUCTION

Hearing loss is a problem with the sensory system that is usually disregarded. It has been shown to have a detrimental effect on physical, cognitive, behavioral and social functions as well as the overall quality of life.[1] A person's life can suffer greatly as a result of hearing loss. Communication issues, poor emotional health, decreased cognitive function and a lower quality of life are just a few of the components of daily living that might be impacted. Unaddressed hearing loss, including congenital hearing loss, can seriously impede a child's socialization, education and developmental progress. The age at which intervention (amplification or enrolment in educational programs) is started is a significant mitigating factor.

Numerous studies demonstrate that children with congenital hearing loss can develop age-appropriate cognitive and spoken language abilities with the help of early diagnosis and intervention before the age of six months.[2,3,4] The treatment of newborns and young children with hearing loss depends on the early detection

of hearing loss. Newborn hearing screening has major benefits when combined with appropriate and timely rehabilitation. These benefits include a reduction in the age at which a diagnosis and intervention are made as well as an improvement in the development of language and cognitive skills. For infants who receive timely and appropriate care, these benefits translate into better social and educational outcomes. The Joint Committee on Infant Hearing (JCIH, 2007) states that identifying infants with medical conditions that can result in late-onset hearing loss and developing a plan for ongoing monitoring of their hearing status are secondary goals.[5,6]

The EHDI guidelines state that a child must complete a hearing screening by one month of age, be diagnosed with a hearing loss by three months of age, have hearing aids chosen and fitted within a month of the hearing loss being confirmed, if the parent chooses that option, and be enrolled in early intervention (EI) services by six months of age.

Screening initiatives aim to identify all forms of permanent childhood hearing loss (PCHL). Some protocols, such as those used in neonatal intensive care units (NICUs) or well-baby nurseries, are more successful than others at identifying the different types and severity of hearing loss in various populations.

Currently, otoacoustic emissions (OAE) and automated auditory brainstem response (A-ABR) testing are used to screen newborns for hearing loss. Both term and preterm infants can have these physiological, non-invasive, automated screening tests done at their bedsides. They can be carried out consecutively or individually (OAEs or A-ABR), depending on the screening protocol.[7]

The A-ABR and OAE tests are automated screening versions of more in-depth hearing loss diagnostic exams. Over the years, many methods and strategies for detecting hearing loss in newborns have been employed. Public awareness campaigns, high-risk registers and screening programs using physiological and/or behavioural tests often in conjunction with the use of risk indicators are a few examples of these.[8]

Parents receive assistance from medical specialists, including doctors, paediatricians and otorhinolaryngologists, during the screening, diagnostic and intervention processes. Gynaecologists and paediatricians are crucial in detecting hearing loss at the first level of intervention. These healthcare workers are the ones who initially interact with infants and their parents.

Therefore, they must understand the risk factors for newborn hearing loss and have a positive attitude toward early intervention. There were few studies conducted to evaluate the Knowledge Attitude and Practices (KAP) of NBHS among paediatricians and other physicians in Western countries and few in the Indian context.[9-14]

Thus, the current study aims to compare and examine the knowledge, attitudes, and practices of gynaecologists and paediatricians regarding newborn hearing screening in Odisha. We expected a positive attitude, higher knowledge and continued practice about NBHS among paediatricians and gynaecologists in Odisha.

METHODS

Study design

A prospective cross-sectional survey was conducted in Odisha, India. The study protocol was approved by the institutional ethical committee of AYJNISHD, Mumbai and it was carried out from January 2023 till December 2023. Data was collected using a convenient sampling method.

Material development

A questionnaire was developed based on previous research. The tool had both open-ended and closed-ended questions and comprised of five sections. The first section included demographic details to keep track of the participants for future reference and included name, age, gender, contact details, year of experience and work settings. The “Knowledge” section contains 15 questions.

There are two types of questions included. One category of questions contains multiple-choice questions that have only one correct answer out of the provided five options; and another type contains questions that have nine options, of which five are correct and the remaining are incorrect. The “Attitudes” section contains 15 statements and each statement has a five-point rating scale - strongly agree, agree, neither agree nor disagree, disagree, and strongly disagree.

Participants had to choose one option according to their attitude toward the NHS. There are 15 yes/no questions included in the “Practices” section. This section assessed whether professionals were practicing NHS in their work settings or not. A total of five open-ended questions were added to this questionnaire. These assess the overall knowledge, attitude, and practice of the NHS among professionals in a descriptive manner.

The developed questionnaire was then given to three audiologists with more than five years of clinical experience and also to two paediatricians and one gynaecologist for content validity. The validators' suggestions were taken into consideration, and modifications were made accordingly. The final questionnaire was prepared and printed.

Scoring of the tool

In Knowledge section Participants who answered correctly get a score of 1, and those who answered incorrectly get a score of 0. For the items that had nine

options with five correct responses, participants were given a score of 1 if they correctly marked at least 4, while those who marked 3 or fewer correct options got a 0 score. Other questions that have a single correct option were scored as 0 or 1 depending on the answer chosen. Minimum obtainable score for this section was thus 0 while maximum was 15. The attitudes section has two types of statements: those denoting positive attitude towards NHS and those with negative attitude. Ten statements were positively framed while answers to five were indicative of negative attitude. For the positively stated items, strongly agree was given a rating of 5, while strongly disagree was given a rating of 1. For the negatively framed items, strongly agree was given a score of 1, while strongly disagree was given a score of 5.

Minimum obtainable score for this section was thus 15 while maximum was 75. In Practices section individuals who answered "yes" got a score of 1, and those who answered "no" got a score of 0.

Minimum obtainable score for this section was thus 0 while maximum was 15. After scoring all the three sections, total score was obtained for all the items on the tool. Minimum obtainable total score was thus 15 while maximum was 105.

Participants

A total of 300 participants i.e., 150 each of gynaecologists and paediatricians were recruited in this study. The age range of paediatricians varied from 35-68 years (M=45.3, SD=4.38) and gynaecologists varied from 32-55 years (M=46.2, SD=5.69). The years of experience ranged from 3 to 22 years among paediatricians and 5-18 years among gynaecologists. These details are depicted in Table 1. Paediatricians and gynaecologists working in health care setup, who have valid MCI registration and experience of more than 2 years were included in this study.

Procedure

The aim of the study was explained, and written consent was obtained from the participants. A hard copy of the questionnaire was given to the professionals to fill out. They were instructed to complete each section of the tool by responding to each item and also completing the open-ended section. Scoring was then done for each participant for each of the three sections as described earlier and the total score for each section was calculated.

Statistical analysis

Shapiro-Wilk test was applied to test the distribution of the parameters for the two groups. The results of the test of normality revealed that all the data on knowledge, attitudes and practices for both paediatricians and gynaecologists differed significantly from normal distribution. Hence, non-parametric tests were used for statistical testing.

RESULTS

Knowledge section

The descriptive statistics for the scores obtained by the paediatricians and gynaecologists on the knowledge section of the tool are provided in table 3 and graph 1. Paediatricians have a median score of 8, ranging from 2 to 12, while gynaecologists have a median score of 6, ranging from 2-8. This suggests paediatricians have greater knowledge about NHS in comparison to gynaecologists. To ascertain if this difference between the median scores of paediatricians and gynaecologists for knowledge section is statistically significant, the Mann-Whitney U test was administered. The U value is 4812, which is statistically significant at the 0.000 level.

In the knowledge section, paediatricians have moderate knowledge. In the causes of hearing loss domain, 28.6% of participants correctly answered both questions; however, 22.7% didn't have a correct answer, and the remaining participants answered one question correctly and another wrong.

In the test protocol domain, 63.3 % of participants have knowledge regarding test protocol, and tests usually used for screening, and 59.3% of paediatricians have knowledge regarding the JCIH protocol used for screening. 59.3% of participants identified all the consequences of hearing loss from the questions.

In the knowledge section, gynaecologists have weak knowledge. In the causes of hearing loss domain, 17.3% of participants correctly answered both questions; however, 42% didn't have a correct answer.

In the test protocol domain, 42% of participants have knowledge regarding test protocol, and tests usually used for screening, and 28.7% of gynaecologist have knowledge regarding the JCIH protocol used for screening. 50.7% of participants identified all the consequences of hearing loss from the questions.

Attitudes section

The descriptive statistics for the scores obtained by the paediatricians and gynaecologists on the attitudes section of the tool are provided in Table 4 and Graph 3. Paediatricians have a median score of 58, ranging from 27-67, while gynaecologists have a median score of 48, ranging from 37-58. This suggests paediatricians have a better or positive attitude in comparison to gynaecologists.

To ascertain if this difference between the median scores of pediatricians and gynaecologists for attitudes section is statistically significant Mann-Whitney U test was

applied. The U value is 2241, which is statistically significant at the 0.000 level. 95.3% of paediatricians have a positive attitude toward newborn hearing screening. 78% of paediatricians disagree with the negative attitude toward the NHS. 82.9% of gynaecologists have a positive attitude toward newborn hearing screening. 56.7% of gynaecologists disagree with the negative questions regarding the NHS.

Table 1: Results for knowledge section.

Knowledge	N	Percentile			Range of scores	IQR	U value	P value
		25th	50th	75th				
Paediatricians	150	7	8	9	2-12	2	4812	0.000
Gynaecologists	150	4.75	6	7	2-8	2.25		

Table 2: Results for the attitudes section.

Atitudes	N	Percentile			Range of scores	IQR	U value	P value
		25th	50th	75th				
Pediatricians	150	55	58	61	27-67	6	2241	0.001
Gynaecologists	150	44	48	50.25	37-58	6.25		

Table 3: Results of the practices section.

Practice	N	Percentile			Range of scores	IQR	U value	P value
		25th	50th	75th				
Pediatricians	150	7	8	9	3-11	2	2384	0.000
Gynaecologists	150	4	5	5	2-11	1		

Practices section

The descriptive statistics for the scores obtained by the pediatricians and gynaecologists on the practices section of the tool are provided in table 5 and graph 4.

Pediatricians have a median score of 8, ranging from 3-11, while gynaecologists have a median score of 5, ranging from 2-11. This suggests pediatricians are more involved in practices pertaining to NHS in comparison to gynaecologists.

To ascertain if this difference between the median scores of pediatricians and gynaecologists for practices section is statistically significant Mann-Whitney U test was applied. The U value is 2384, which is statistically significant at the 0.000 level.

In this study, it is observed that 58% of pediatricians are practicing NHS in their respective settings. 31.3% of pediatricians are having difficulty explaining the result of hearing loss to the parents.

Among the participants, 76% did not receive any training regarding hearing screening. Results revealed that 28.7% of gynaecologists are practicing NHS in their respective settings. 72% of gynaecologists are having difficulty explaining the result of hearing loss to parents. Among the participants, 76% did not receive any training regarding hearing screening.

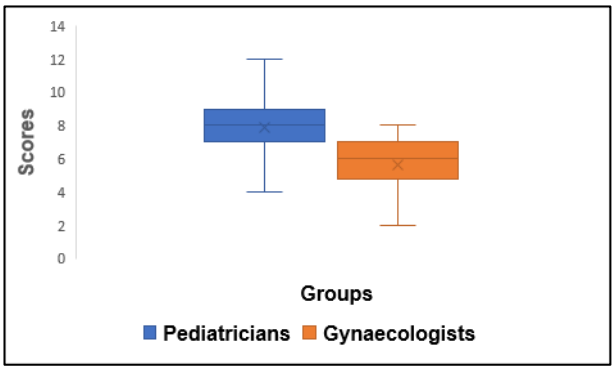

Figure 1: Distribution of scores obtained by the paediatricians and gynaecologists on the knowledge section.

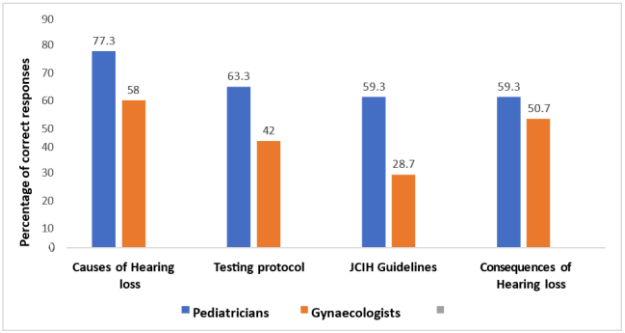

Figure 2: Percentage of pediatricians and gynecologists responding to questions on knowledge about different aspects.

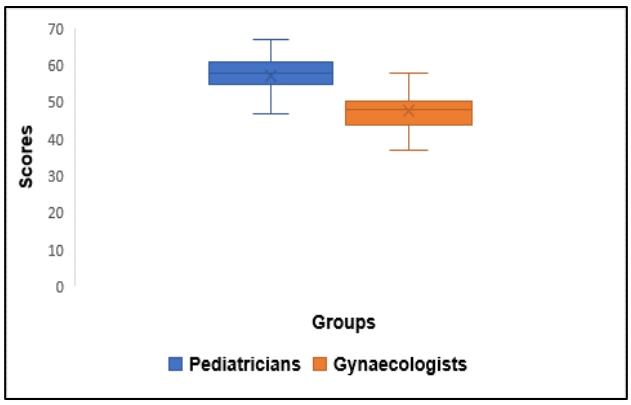

Figure 3: Distribution of scores obtained by the paediatricians and gynaecologists on the attitudes section.

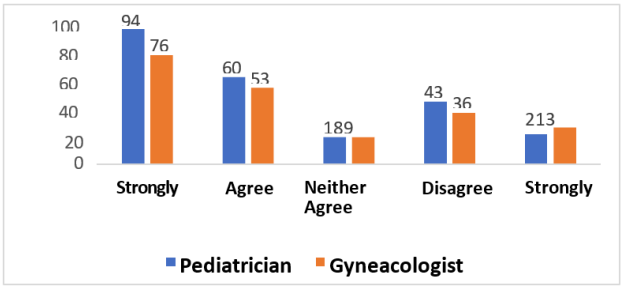

Figure 4: Frequency distribution of ratings on the attitudes section.

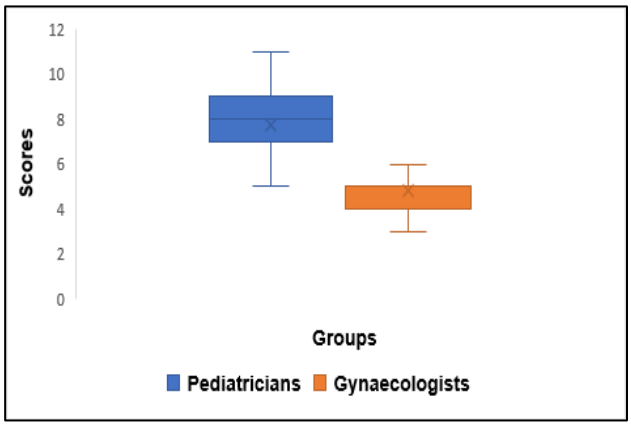

Figure 5: Distribution of scores obtained by the pediatricians and gynaecologists on the practice section.

DISCUSSION

In India, with a population of 1.3 billion and a prevalence of 12% hearing loss, it is necessary to implement the NHS in full swing.[8] Although it is already being implemented in some of the states, the inactivity is based on the knowledge and attitude of pediatricians and gynaecologists. Early hearing detection and intervention have received a lot of attention in the JCIH policy statement.[6]

Universal newborn hearing screening and subsequent management both greatly benefit from the involvement of primary care physicians. In this interdisciplinary framework, other healthcare professionals also play a significant role that cannot be undervalued. The NHS is a requirement of the state, particularly in industrialized nations like the US. It is still in the early phases of application in many developing nations.

Knowledge about NHS

In this questionnaire, 15 questions were asked to evaluate the knowledge regarding NHS among pediatricians and gynaecologists. The Mann-Whitney U test indicates that pediatricians have a significantly greater knowledge about NHS as compared to gynaecologists. These findings are in accordance with many previous studies.[9-14]

One-fourth of gynaecologists don't have the correct idea about hearing loss, and more than 50% of pediatricians know very well about test protocols, tests used in NHS, etc. Overall, 60% of participants are well aware of the JCIH protocol, this result is similar to the previous study of Pathak et al.[10] This may be because pediatricians are trained on and well-acquainted with problems in infants and children. Parents primarily consult pediatricians if they face any problems with their children. In the NHS program, pediatricians are playing a more active role in screening than gynaecologists. For this reason, pediatricians have greater knowledge than gynaecologists, in general, and the same is reflected in the sample from Odisha.

In the knowledge section, the range varies from 2 to 7, indicating that the knowledge regarding NHS varies from participant to participant. Some participants have higher knowledge while some participants have lower knowledge compared to others. This result indicates that they also need more training, conferences and education regarding NHS.

In this study, the mean score obtained by gynaecologists was low in comparison to pediatricians. Only 18% of practitioners have good knowledge regarding the causes of hearing loss. This may be due to the fact that they are not acquainted with issues/problems faced by babies after they are born or delivered by the gynaecologists. However, the average gynaecologist has knowledge regarding the use of test materials and test protocols for the NHS. The majority of participants (80%) did not have any idea about any guidelines available for the NHS, that may be due to the fact that they were not receiving any training, courses or even practice regarding the NHS. These findings are consistent with those in the literature, which revealed that prenatal care practitioners (obstetricians and gynaecologists) were found to be less knowledgeable about newborn hearing screening and that only a small number of them advised the parents about it.

Attitudes towards NHS

The majority of pediatricians were found to have a favorable attitude towards newborn hearing screening and the execution of the program in various settings. This high level of awareness and positive outlook may be due to the Indian Academy of Pediatrics' (IAP) childhood disability group's organization of a national meeting in 2015 to develop consensus recommendations for newborn hearing screening, which was later made available online in 2017. The study's participants might have used this consensus statement as a resource for further education. Another study also came to a similar conclusion, stating that regular updates to medical education are also required in developing nations in order to prevent pediatric hearing loss. In this study, a similar finding was observed, 95% of pediatricians have a positive attitude towards implementing the NHS. The majority of gynaecologists also have a positive attitude toward the NHS. Although both professionals have a highly positive attitude, this study found a significant difference in attitude between them.

This attitude is positive, as they know the importance of screening and the consequences of hearing loss in newborn babies. This attitude will build on the positive aspects of implementing the NHS in a very effective way. Gynaecologists do play a significant role from the time of the child's birth until the mother is cared for, they are the first point of contact who advise the parents about the child's growth and potential issues the mother or kid may encounter. However, their communication would be restricted if they were not given the most recent information on the newest hearing screening techniques, diagnoses, and interventions.

Practices of NHS

Only 58% of pediatricians working in hospitals have a newborn hearing screening program. However, 28.3% of gynaecologists practice NHS in their respective settings. The biggest barriers to implementing the NHS are the unavailability of screening professionals, a lack of funds, and a lack of instruments and infrastructure, especially in rural hospitals.

Only 16% of gynaecologists and 31.1% of pediatricians refer newborn infants for hearing screening. 28% of pediatricians and 11.3% of gynaecologists counsel parents regarding the importance of the NHS. This result suggests that even though professionals have a high level of knowledge and positive attitudes towards the NHS, only a few of them are referring newborn babies for screening. It was concluded from this study that the positive attitude and available knowledge is not translating into practice among these professionals due to the mentioned barriers. This is the main reason for NHS program not being implemented across the state of Odisha and other states in the country.

In response to the question, “Which professionals should be included in the NHS?”, most of the participants recommended ENT, pediatricians, gynaecologists and ENT assistants. However, only a few professionals know the role of an audiologist in the NHS. This is consistence with previous studies.[9,11,13] The participants suggested that the three steps to be taken to implement the NHS effectively are providing funds, recruiting more screening professionals and creating awareness among professionals, hospital management, and parents. These are also the main barriers to implementing the NHS in Odisha.

Be cautious in generalizing findings, consider the study’s context and its relevance to different regions or HealthCare settings. We covered only the urban area. Limitations of a self-administered tool apply to this study.

CONCLUSION

From this survey, it can be concluded that most of the pediatricians know NBHL in comparison to gyenecologist, while both of them have positive attitude in implementing NBHS in Odisha. Out of all the participants only few Pediatricians are practicing NBHS and referring new born baby for screening while gyenecologists are not conducting all these activities. An awareness should be created among both the professionals about NBHS, effect of hearing loss and to whom they refer.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

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Cite this article as: Behera D, Nandurkar A. Knowledge, attitudes, and practices of gynaecologists and paediatricians regarding newborn hearing screening in Odisha. Int J Otorhinolaryngol Head Neck Surg 2024;10:662-8.